Assignment 02

PUBH 8878

- 1. Laird, Section 4.5, Exercise 2
- 2. Laird, Section 4.5, Exercise 7
- 3. Laird, Section 4.5, Exercise 11
- 4. Laird, Section 4.5, Exercise 14
- 5. Laird, Section 2.4, Exercise 4
- 6. Laird, Section 2.4, Exercise 7
- 7. Consider a sample size of n of unrelated haploid individuals is obtained from some population with the objective of estimating allele frequency at a biallelic locus. The sample contains x copies of A, and n-x copies of a.
 - a. Plot the probability distribution of X given n = 30, and $\theta = .1$. Plot the probability distribution of X given n = 1000, and $\theta = .1$.
 - b. Lets say we observed 30 samples, with 10 copies of allele A. Plot the likelihood function for θ
 - c. What is the MLE of θ ?
 - d. Let's say n = 1000, and x = 100. What is the sampling variance of $\hat{\theta}$?
 - e. Let's say n = 100, and x = 10. What is the sampling variance of $\hat{\theta}$? Why is this different than the result above?